# Invasive Species – Noxious Weed Risk Assessment

# SERAL

Project Location:
Tuolumne County, California

Mi-Wok / Summit Ranger District
Stanislaus National Forest

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**Introduction**

Forest Service Manual 2903(4) requires the Forest to "determine the risk of introducing, establishing, or spreading invasive species associated with any proposed action, as an integral component of project planning and analysis, and where necessary provide for alternatives or mitigation measures to reduce or eliminate that risk prior to project approval." The Stanislaus National Forest Land and Resource Management Plan (Forest Plan) as amended, and the Pacific Southwest Region Noxious Weed Management Strategy require that a noxious weed risk assessment be conducted to "determine risks for weed spread … associated with different types of proposed management activities" (USDA, USFS 2010).

Noxious weeds are defined in FSM 2905 and the Plant Protection Act of 2000 as "any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment."

The California Department of Food and Agriculture (CDFA) developed and maintains the State noxious weed list which the Stanislaus National Forest referenced in developing the Noxious Weeds and Non-native Invasive Pest Plants of Concern for the Forest (Appendix A). The weed ratings assigned by CDFA "reflect CDFA's view of the statewide importance of the pest, the likelihood that eradication or control

efforts would be successful, and the present distribution of the pest within the state" (CDFA [n.d.]b). CDFA defines their noxious weed ratings as follows:

> *"A" - A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment. ... A-rated pests are subject to state (or [County Agricultural] commissioner when acting as a state agent) enforced action involving eradication, quarantine regulation, containment, rejection, or other holding action.*
>
> *"B" - An pest of known economic or environmental detriment and, if present in California, it is of limited distribution. ... At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action.*
>
> *"C" - A pest of known economic or environmental detriment and, if present in California, it is usually widespread. … If found in the state, they are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner.*

Inventories for weeds in support of Forest Service projects are conducted using the Noxious Weeds and Non-native Invasive Pest Plants of Concern for the Forest list (Appendix A) as a guide. The list was generated from several sources including the Forest Plan (Table 3.6a, 2001 SNFPA Final Environmental Impact Statement (FEIS), V.2, Chpt 3, part 3.6, pages 310-311), the CDFA list of State-rated noxious weeds (CDFA [n.d.]a), new weed discoveries in the Forest, information provided by local County Agricultural Commissioners, occurrence records at CalFlora (a web-based botanical database), published technical references (Baldwin, et. al. 2012, Bossard, et.al. 2000, Whitson, et.al. 1996), and observations.

This noxious weed risk assessment evaluates the risk for weed introduction and spread by project activities in the SERAL project.

**Existing Condition**

Portions of the project area have been surveyed beginning in 2004 through the present. Large portions of the project area have never been surveyed for invasive plants and previous surveys have not be resurveyed or monitored in several years.

Known Invasive Plants

Currently, there are approximately 231 acres of mapped known occurrences of 27 invasive plant species, (Table 1) within the project area. Yellow star-thistle, Maltese star-thistle (tocalote), and bull thistle account for approximately 100 acres of the known, mapped occurrences. Occurrences are found across the project area and more than 97 percent are less than one acre in size.

Table 1 – Known Invasive Plants

| Scientific Name | Common Name | CDFA rating | Cal-IPC rating | # of pops | Total acres |
|---|---|---|---|---|---|
| *Aegilops triuncialis* | barbed goatgrass | B | High | 9 | 0.6 |
| *Ailanthus altissima* | tree of heaven | C | Moderate | 5 | 0.5 |

| | | | | | |
|---|---|---|---|---|---|
| *Bromus tectorum* | cheatgrass | C | High | 2 | 0.3 |
| *Carduus acanthoides ssp. acanthoides* | Italian plumeless thistle | A | Limited | 77 | 2.7 |
| *Centaurea melitensis* | Maltese star-thistle, tocalote | C | Moderate | 77 | 29.4 |
| *Centaurea solstitialis* | yellow star-thistle | C | High | 249 | 32.9 |
| *Chondrilla juncea* | rush skeletonweed | A | Moderate | 3 | 0.1 |
| *Cirsium arvense* | Canada thistle | B | Moderate | 1 | 0.1 |
| *Cirsium vulgare* | bull thistle | C | Moderate | 272 | 111.4 |
| *Convolvulus arvensis* | field bindweed | C | NL | 2 | 0.1 |
| *Cynodon dactylon* | Bermudagrass | D | Moderate | 3 | 0.1 |
| *Cytisus scoparius* | Scotch broom | C | High | 33 | 1.6 |
| *Elymus caput-medusae* | medusahead | C | High | 51 | 4.8 |
| *Euphorbia oblongata* | eggleaf spurge | B | Limited | 5 | 0.7 |
| *Foeniculum vulgare* | sweet fennel | | Moderate | 1 | 0.1 |
| *Genista monspessulana* | French broom | C | High | 14 | 1.5 |
| *Hypericum perforatum* | common St. Johnswort | C | Limited | 106 | 9.5 |
| *Lathyrus latifolius* | perennial pea | | NL | 32 | 2.2 |
| *Rubus armeniacus* | Himalayan blackberry | | High | 218 | 15 |
| *Rubus laciniatus* | cutleaf blackberry | | NL | 10 | 0.2 |
| *Rumex* | dock | | | 2 | 0.1 |
| *Saponaria officinalis* | bouncingbet | | Limited | 49 | 3.8 |
| *Sisymbrium altissimum* | tall tumblemustard | | NL | 2 | 0.1 |
| *Silybum marianum* | blessed milkthistle | | Limited | 25 | 1.6 |
| *Spartium junceum* | Spanish broom | C | High | 14 | 2.8 |
| *Verbascum thapsus* | common mullein | | Limited | 59 | 8.9 |
| *Centaurea stoebe* | Spotted knapweed | A | High | | |

There are ongoing invasive plant treatments occurring in the project area from the Spring-Gap Stanislaus FERC license. Manual and herbicide treatments have occurred on approximately 15% of the known occurrences in the project area.

Habitat Vulnerability

The SERAL action area occurs at elevations ranging from 1,064 feet to 7,863 feet and includes over 118,000 acres. This landscape is comprised of vegetative communities including grassland, meadows, oak woodlands, chaparral, lower westside ponderosa pine, mixed conifer and high elevation red fir and lodgepole pine. The majority of forested area is Sierran Mixed Conifer, which includes ponderosa pine / Jeffrey pine, incense cedar, white fir, sugar pine, and black oak. Plantations are also present throughout the project area and consist mainly of ponderosa pine. Other tree species found include live oak, blue oak, aspen, cottonwood, alder, and Douglas fir. Shrub species present include green leaf and white leaf manzanita, deer brush, chinquapin, mountain whitethorn, buck brush, gooseberry, toyon, birch leaf mountain mahogany, and chamise in lower parts of the river canyon.

The areas of dense trees and brush are not currently particularly vulnerable to noxious weed invasion. The trees and brush block sunlight which noxious weeds require to thrive. The more open areas such as the Oak Woodland, dryer meadows, volcanic lahars and the plantations are very vulnerable because of their fairly open, grassy condition. The project area is vulnerable to a high severity wildfire due to the current departure from the Natural Range of Variation as described in the SERAL DEIS. The area would be at a much higher risk of weed invasion following a high severity fire.

**Risk:** High risk in open areas; High risk for vulnerability from possible stand-replacing wildfire due to proximity of existing noxious weeds.

Non-project Weed Vectors

Weed vectors that currently are in the project area and vicinity include range cattle, OHV users, wildlife, campers, hunters, and road traffic/vehicles. There are semi-residential private lands, commercial timber lands, and water and power transmission infrastructure within the project area.

**Risk:** Moderate to High.

**Habitat Alteration as Result of Project**

The project entails using heavy equipment to improve or repair existing road. Trees would be felled and yarded to landings along skid trails. Existing skid trails would be used. Some new skid trails may be constructed. Temporary roads would be constructed then decommissioned after use. Large areas of the ground in tree thinning units would be disturbed by logging equipment. Much of the project area would be underburned or broadcast burned. There would be short term, localized ground disturbance where trees and brush are removed. There would be long-term habitat alteration due to the thinning activities, which would open up the stands, allowing more light to the forest floor. Burning would remove thick forest litter that might otherwise block weed germination.

**Risk**: High for short-term disturbances, High for long-term habitat disturbance.

Increased Vectors as a Result of Project Implementation

Invasive plant seed could be vectored through the activities authorized to implement the project. Various type of equipment and associated personnel have the possibility to introduce seed depending on where they were prior, how clean the equipment is and proximity to existing populations.

The project authorizes invasive plant treatments with manual and chemical/herbicide methods. Where an early detection rapid response approach is used, new infestation would quickly be controlled or eradicated.

**Risk:** Moderate to High. Low with Invasive plant treatmetns.

**Management Requirements/Mitigation and Monitoring**

The following management requirements are consistent with FSM 2900 – Invasive Species Management. They would reduce the likelihood of introducing new noxious weed infestations and reduce the risk of spreading existing noxious weeds in the project area.

1) For all logging contract operations, implement the equipment cleaning requirements in the standard contract provisions.

This management requirement addresses:

> FSM 2902(1): Prevent the introduction, establishment, and spread of new invasive species; and
>
> FSM 2903(6): Use contract and permit clauses to require that the activities of contractors and permittees are conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species.

2) For all non-logging operations and activities: all shredding equipment, road grading or construction equipment, clothing, particularly footwear, and other equipment, including the transport vehicle should be free of soil, mud (wet or dried), seeds, vegetative matter or other debris that could contain seeds in order to prevent new infestations of noxious weeds in the project area. Dust or very light dirt, which would not contain weed seed, is not a concern.

This management requirement addresses:

> FSM 2902(1): Prevent the introduction, establishment, and spread of new invasive species;
>
> FSM 2903(6): Use contract and permit clauses to require that the activities of contractors and permittees are conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species; and
>
> FSM 2903(7): Make every effort to prevent the accidental spread of invasive species carried by contaminated vehicles, equipment, personnel, or materials (including plants, wood, plant/wood products, water, soil, rock, sand, gravel, mulch, seeds, grain, hay, straw, or other materials).

3) Where possible, manually treat dense infestations of bull thistle and woolly mullein in landings and skid trails prior to using these facilities to prevent spread, if flowers or seeds are present on the plants. In the years following use of landings and skid trails, monitor for noxious weeds and manually treat dense infestations of bull thistle and woolly mullein. Manual treatment would entail hand pulling, digging, cutting and bagging of flower heads, or solarization with clear plastic (solarization could be used in years following facility use).

This management requirement addresses:

> FSM 2902(1): Prevent the introduction, establishment, and spread of new invasive species;
>
> FSM 2902(2): Early Detection and Rapid Response (EDRR); and
>
> FSM 2903(1): Initiate … actions to prevent, control, and eliminate priority infestations of invasive species in aquatic and terrestrial areas of the National Forest System using an integrated pest management approach….

4) When needed for soil stabilization, use certified weed-free mulches where available, mulches with low risk of weed introduction where certified weed-free is not available, and certified weed-free seed mixes. When project-generated logging slash or chipped biomass is used for soil stabilization, it should be obtained from sites free of noxious weeds. Seed mixes must conform to the Region 5 Policy on the Use of Native Plant Material in Restoration or Revegetation Projects.

This management requirement addresses:

> FSM 2902(1): Prevent the introduction, establishment, and spread of new invasive species; and
>
> FSM 2903(7): Make every effort to prevent the accidental spread of invasive species carried by contaminated vehicles, equipment, personnel, or materials (including plants, wood, plant/wood products, water, soil, rock, sand, gravel, mulch, seeds, grain, hay, straw, or other materials).

5) Crushed rock, drain rock, riprap and soil fill for road restoration, reconstruction and maintenance shall be obtained from weed-free sources. Do not stockpile or stage these or other construction materials in sites with noxious weeds.

This management requirement addresses:

> FSM 2902(1): Prevent the introduction, establishment, and spread of new invasive species; and
>
> FSM 2903(7): Make every effort to prevent the accidental spread of invasive species carried by contaminated vehicles, equipment, personnel, or materials (including plants, wood, plant/wood products, water, soil, rock, sand, gravel, mulch, seeds, grain, hay, straw, or other materials).

6) Monitor the project area through time for noxious weeds to determine if existing weeds are being spread, or if weeds were accidentally introduced by project activities. Hand pull any small, newly discovered infestations of high priority weeds. Assess the need for a long-term eradication strategy, if needed.

This management requirement addresses:

> FSM 2902(1): Prevent the introduction, establishment, and spread of new invasive species;
>
> FSM 2902(2): Early Detection and Rapid Response (EDRR); and
>
> FSM 2903(1): Initiate … actions to prevent, control, and eliminate priority infestations of invasive species in aquatic and terrestrial areas of the National Forest System using an integrated pest management approach….

**Anticipated Response of Noxious Weeds to Proposed Action**

Overall Risk *With* Management Requirements:

Implementing the management requirements listed above as part of the proposed action of the Project reduces or eliminates the risks of introducing or spreading noxious weeds in the project area. Implementation of the proposed project with the noxious weed management requirements would impart a low risk of noxious weed introduction and spread by the Project.

Overall Risk *Without* Management Requirements:

Implementing the Project *without* implementing the management requirements listed above would impart a moderate to high risk of introducing new infestations of noxious weeds or spreading existing weeds, depending on whether or not there were noxious weeds present where the vehicle had been previously.

Action alternatives 1 and 3

No Action and Alternative 4

**References**

**Appendix A**

**Noxious Weeds and Non-native Invasive Pest Plants Of Concern**

**Stanislaus National Forest**

Russian knapweed, *Acroptilon repens* perennial

jointed goat grass, *Aegilops cylindrica* annual grass

three-awned goat grass *Aegilops neglecta* annual grass

barbed goat grass, *Aegilops triuncialis* annual grass

tree of heaven, *Ailanthus altissima* deciduous tree

capeweed, *Arctotheca calendula* annual

prostrate capeweed, *Arctotheca prostrata* perennial herb

giant reed, *Arundo donax* perennial grass-wet drainages, ponds

black mustard, *Brassica nigra* perennial

cheat grass, *Bromus tectorum* annual grass

plumeless thistle, *Carduus acanthoides* ssp. *acanthoides* biennial

Italian thistle, *Carduus pycnocephalus* ssp. *pycnocephalus* annual

slenderflower thistle, *Carduus tenuiflorus* annual

smooth distaff thistle, *Carthamus creticus* annual

woolly distaff thistle, *Carthamus lanatus* annual

purple star-thistle, *Centaurea calcitrapa* annual to perennial

diffuse knapweed, *Centaurea diffusa* annual to perennial

Iberian star-thistle, *Centaurea iberica* annual to biennial (perennial?)

tocalote, *Centaurea melitensis* annual

yellow star-thistle, *Centaurea solstitialis* annual

spotted knapweed, *Centaurea stoebe* ssp. *micranthos* perennial

squarrose knapweed, *Centaurea virgata* ssp. *squarrosa* perennial

rush skeletonweed, *Chondrilla juncea* perennial

Canada thistle, *Cirsium arvense* perennial

bull thistle, *Cirsium vulgare* biennial

field bindweed, *Convolvulus arvensis* perennial vine

jubata grass, *Cortaderia jubata* perennial grass

pampas grass, *Cortaderia selloana* perennial grass

Bermuda grass, *Cynodon dactylon* perennial

Scotch broom, *Cytisus scoparius* deciduous shrub

foxglove, *Digitalis purpurea* biennial herb

stinkwort *Dittrichia graveolens* annual herb

longbeak stork's bill, **Erodium botrys* annual herb

shortfruit stork's bill, **Erodium brachycarpum* annual herb

redstem filaree , **Erodium cicutarium* annual herb

greenstem filaree, **Erodium moschatum* annual herb

Medusahead grass, *Elymus caput-medusae* annual grass

quackgrass, *Elymus repens* perennial grass

oblong spurge, *Euphorbia oblongata* perennial

leafy spurge, *Euphorbia virgata* perennial

fennel, *Foeniculum vulgare* perennial

French broom, *Genista monspessulana* deciduous shrub

shortpod mustard *Hirschfeldia incana* annual herb

hydrilla, *Hydrilla verticillata* aquatic herb

Klamathweed, *Hypericum perforatum ssp. perforatum* perennial

dyers woad, *Isatis tinctoria* perennial

perennial sweetpea, *Lathyrus latifolius* perennial

whitetop, *Lepidium appelianum* perennial

lens-podded hoary cress, *Lepidium chalepense* perennial

heart-podded hoary cress, *Lepidium draba* perennial

perennial pepperweed, *Lepidium latifolium* perennial, wet sites

oxeye daisy, *Leucanthemum vulgare* perennial

Dalmatian toadflax, *Linaria dalmatica* ssp*. dalmatica* perennial

purple loosestrife, *Lythrum salicaria* perennial

parrot feather watermilfoil, *Myriophyllum aquaticum* aquatic herb

Eurasian milfoil, *Myriophyllum spicatum* aquatic herb

American pokeweed *Phytolacca americanum* var. *americanum* perennial

black locust, *Robinia pseudoacacia* deciduous

Himalayan blackberry, *Rubus armeniacus* perennial vine

cutleaf blackberry, *Rubus laciniatus* perennial vine

Russian thistle, tumbleweed, *Salsola tragus* annual

bouncing bet, soapwort, *Saponaria officinalis* perennial

milk thistle, *Silybum marianum* annual or biennial

tumble mustard, *Sisymbrium altissimum* annual

white horse-nettle, *Solanum elaeagnifolium* perennial

Johnsongrass, *Sorghum halepense* perennial, large grass

Spanish broom, *Spartium junceum* deciduous shrub

puncturevine, *Tribulus terrestris* annual, prostrate herb

gorse, *Ulex europaeus* thorny perennial shrub

woolly mullein, *Verbascum thapsus* perennial, lg. fuzzy leaves

*these species are primarily a concern on lava caps but can also be indicators of adverse impacts in some ecosystems. Report when found on lava caps or when they form monocultures or near monocultures.

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